GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT TERMINATION

Date May 16, 1974

PROJECT TITLE: "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

PROJECT NO: A-1463

PROJECT DIRECTOR: Mr. G. K. Huddleston

SPONSOR: Georgia Department of Administrative Services; Atlanta

TERMINATION EFFECTIVE: Contract expired 6/30/73; Last Monthly Report submitted 12/14/73.

CHARGES SHOULD CLEAR ACCOUNTING BY: N/A - all charges have been billed and paid.

CONTRACT CLOSEOUT ITEMS REMAINING: None; Follow-on project proposed.

SPECIAL TECHNIQUES DIVISION

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GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

9 October 1972

Mr. T. S. Britton, Director
Scientific Data Center #7
Department of Administrative Services
Room 124
Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 1 Covering the Period from 15 August 1972 to 30 September 1972, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

In accordance with Commissioner Richard M. Harden's letter of authorization dated 15 August 1972, work on the subject project was initiated on 15 August 1972.

Progress to date includes the completion of the design of the remote data acquisition system, placement of orders for all major parts and components, and continued coordination between Georgia Tech and Scientific Data Center #7.

On 18 August, a meeting was held at Georgia Tech to familiarize all participants with the project and to finalize plans. Attendees included representatives from Georgia Tech's Engineering Experiment Station, Scientific Data Center #7, and Air Quality Evaluation Service. Mr. Bill Estes specified that the sensors for the following air pollutants in the mobile monitoring van be interfaced to the remote data acquisition system: SO_2, CO, Oxidants (Ozone), Hydrocarbons, Wind Speed, Wind Direction. The following schedule for the project was established:

15 September:	Complete design and placement of orders for all major parts and components.
15 October:	Deliver van to Georgia Tech.
1 November:	Install data sets in van.
15 November:	Establish communications between van at Georgia Tech and IBM 1800 at Scientific Data Center #7.

The first item in the above schedule has been completed.

On 21 September, a meeting was held at Georgia Tech with representatives of Scientific Data Center #7 to discuss technical progress on the project. Mr. Virgil Baker may be consulted to provide technical details of the remote data acquisition system as designed by Mr. T. M. Miller at Georgia Tech Engineering Experiment Station (Radar Division).

On 27 September, representatives of Georgia Tech Engineering Experiment Station, Radiological Health Section (DOAS), and Scientific Data Center #7 met at the Nuclear Research Center at Georgia Tech to finalize plans for the installation and interfacing of a second remote data acquisition system to radiological sensors. It was mutually agreed that the sensors for the following parameters would be selected: Kanne chamber, wind speed, wind direction (a total of three analog signals). To avoid any misunderstanding, it must be emphasized that no provision has been made for the installation and interfacing of the second remote data acquisition system under the present project; however, this task will be performed if effort and materials requirements permit.

As of 30 September 1972, approximately 160 man-hours of engineering and technician time have been expended. Approximately $3,800 of the total $13,522 budgeted for this project have been expended or encumbered. It is anticipated that the requested contract funds will be sufficient to complete the work delineated in the original proposal.

Respectfully submitted,

Gene K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division

Addressee: 2

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

10 November 1972

Mr. T. S. Britton, Director
Scientific Data Center #7
Department of Administrative Services
Room 124
Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 2 Covering the Period from 1 October 1972 to 1 November 1972, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

Efforts during the current reporting period have been concentrated on the fabrication of the first of the two remote data acquisition systems.

Under Mr. J. B. Langley's supervision, the fabrication of the first system is progressing steadily. The wiring list for the main circuit board has been made. The student assistant working with Mr. Langley has completed about 50% of the wiring of this board and some circuits have been tested. Specific interfacing requirements have been ascertained and orders for the required parts placed. Most of the major parts and components required for the two systems have arrived.

The air monitoring van was delivered to Georgia Tech on 19 October, and the data sets were installed shortly thereafter. Technicians from Air Quality Evaluation Service have restored all instruments to working condition except for the wind speed/direction transducers which were left on the mast at the previous site. Telephone company installers connected the data sets and certified their operational readiness. The van is presently located in the bay of the Electronics Research Building at 347 Ferst Drive, N. W., on the Georgia Tech campus and will remain there until returned to Air Quality Evaluation Service at the conclusion of this project.

Efforts during the month of November will be directed at completing the fabrication of the first system and installing it aboard the van. Barring any unforseen problems, it is anticipated that the system should be in communication with the IBM 1800 computer by the end of November.

As of 31 October 1972, approximately 250 man-hours of engineering and technician time have been expended. Approximately $6,000 of the total $13,522 budgeted for this project have been expended or encumbered. It is anticipated that the requested contract funds will be sufficient to complete the work delineated in the original proposal.

Respectfully submitted,

Gene K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division

Addressee: 2

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

11 December 1972

Mr. T. S. Britton
Scientific Data Center #7
Department of Administrative Services
Room 124
Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 3 Covering the Period from 1 November 1972 to 30 November 1972, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

Efforts during November have been directed toward the fabrication of the first of the two remote data acquisition systems.

Progress on the first system has been steady. The main circuit board wiring has been completed except for a small number of interconnections between functional blocks (to facilitate laboratory debugging). The printer interface has been designed and will be wired on a board separate from the main circuit board. The physical lay-out of the complete system (panel controls, power supplies, circuit boards) has been completed and orders placed for appropriate enclosures (expected delivery: second week of December). Mounting of the system components on an aluminum sheet is proceeding independently of the arrival of the enclosures.

Problems have been encountered in regard to the availability of certain integrated circuit chips; viz., 7402, 7404, 7410, 7485. These items are required before debugging of the main circuit board can be completed. The supplier has assured us that these items are now in stock and that our order (placed in September) is being processed. Also, the 74185 (binary-to-BCD converters) chips (printer interface) are presently unavailable and are not expected to arrive before 15 January 1973. In view of this, hard-wired headers will be used temporarily in their stead, in which case the data will be printed in octal on the Addmaster printer until the headers are replaced by the 74185's.

Progress is also being made in the construction of the second system. The wire list for the main circuit board has been completed and keypunched. This wire list and the unwired board will be sent to Raytheon for wire-wrapping on their computer-controlled machine. The estimated cost of

this service is $500, of which $200 represents a one-time programming charge. Construction of the second system will occur, for the most part, in concert with that of the first.

Efforts during December will be directed at the completion of the first system and installation aboard the van. In accordance with the telephone conversation between Messers. Baker and Huddleston on 7 December, a major effort will be expended to have the remote data acquisition system communicating with the IBM 1800 by 22 December at the latest.

As of 30 November 1972, approximately 450 man-hours of engineering and technician time have been expended. Approximately $8,000 of the total $13,522 budgeted for this project have been expended or encumbered. It is anticipated that the requested contract funds will be sufficient to complete the work delineated in the original proposal.

Respectfully submitted,

Gene K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division

Addressee: 2

ENGINEERING EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

30 January 1973

Mr. T. S. Britton
Scientific Data Center #7
Department of Administrative Services
Room 124
Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 4 Covering the Period from 1 December 1972 to 15 January 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

Efforts during this reporting period have been directed toward the completion of the first of the two remote data acquisition systems, and completion of the second system except for the wiring of the main circuit board.

The construction and wiring of the first system is complete except for the small circuit board required to interface the Addmaster printer to be provided by the sponsor. The enclosures for both systems have been received. Laboratory testing of the complete unit is nearly completed. A few small discrepancies in some logic circuits have been found (not unexpected) and corrections made. Signal wiring has been installed aboard the van in readiness for the installation of the first system. Work remaining to be done includes completion of the laboratory testing, installation and interfacing of the system aboard the van, and testing of the system operation in concert with the central control station at Scientific Data Center #7.

The second (identical) system has been constructed in parallel with the first except for the wiring of the main circuit board as explained in the last progress report. Power supplies, magnetic tape unit, analog interface boards, and front panel controls have been mounted and wired. The printer interface board is being constructed for plug-in to the unit. Work remaining to be done includes the wiring and installation of the main circuit board and laboratory testing of the complete unit to ensure

correct operation. The main circuit board will be sent to Raytheon for wiring only after the main circuit board of the first system has been completely tested and the wiring list verified, hence, minimizing the amount of laboratory testing of the second system.

Copies of this letter report have been sent to Mr. Estes and Mr. Fetz under separate cover.

Respectfully submitted,

Gene K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division

Copies: Addressee (2)

ENGINEERING EXPERIMENT STATION · GEORGIA INSTITUTE OF TECHNOLOGY · 225 North Avenue, Northwest · Atlanta, Georgia 30332

9 March 1973

Mr. Evan Moorehouse
Assistant to the Director
Department of Administrative Services
Room 124, Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 5 Covering the Period from 15 January 1973 to 1 March 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

Efforts during this reporting period have been directed toward the completion of the laboratory testing of the first of the two systems and toward the documentation required to describe the system and its operation.

Laboratory testing of the first system is complete, and the system performs all the functions for which it was designed. The Addmaster printer (provided by DOAS) has been interfaced to the system and performs its functions on command in the prescribed manner. However, the integrated circuits (74185A) required to convert the binary data to BCD data have still not arrived; consequently, the data presented to the printer is meaningless at this time. Insertion of these circuits in the printer interface board and installation of the entire system in its prepared enclosure will complete the work on the first system.

It is anticipated that the completed system will be delivered to the mobile air pollution monitoring van during the week of 12-16 March 1973. The van was moved from Georgia Tech to the Howell Mill Water Works on 1 March by personnel of the Air Quality Evaluation Service. Electric and telephone service to the van has been scheduled by DOAS personnel for connection on 12 March. Appropriate coordination will be effected prior to delivery of the system.

The documentation required to describe the remote data acquisition system and its operation is being prepared. The documentation will consist of circuit schematics, timing diagrams, wire lists, parts lists, and verbal descriptions of circuit operation. The documentation is approximately one-third complete at this time.

The second remote data acquisition (identical to the first and intended for radiological monitoring) is complete except for the wiring of the main circuit board. Now that the laboratory testing of the first system is complete and all wiring finalized, the present wire lists can be up-dated, and the main circuit board of the second system can be shipped to Raytheon for wiring on their computer-controlled machine. It is anticipated that approximately one month will be required for this operation.

As of 1 March 1973, approximately $12,500 of the budgeted $13,532 have been expended. It is anticipated that the remaining funds will be sufficient to complete the work as delineated in the proposal.

Respectfully submitted,

Gene K. Huddleston
Research Engineer

Approved:

J. W. Dees, Chief
Special Techniques Division

Copies: Addressee (4)

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

4 May 1973

Mr. Evan Moorehouse
Assistant to the Director
Department of Administrative Services
Room 124, Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Reports Nos. 6 and 7 Covering the Periods 15 February-15 March 1973 and 15 March-15 April 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

The first of the two Remote Data Acquisition Systems was completed 1 April and is ready for delivery to the air pollution monitoring van located at Howell Mill Water Works.

On 6 April, a laboratory demonstration of the first system was given for the benefit of DOAS technical personnel. At that time, it was decided to delay the delivery of the system until a telephone line was installed at the van. Also, during this waiting period, the software programming and hardware required to prepare the DOAS IBM 1800 computer system for controlling the remote system could be completed so that field testing of the remote system could be accomplished at the time of delivery.

The second Remote Data Acquisition System (intended for radiological monitoring) is complete except for the wiring of the main circuit board. Sufficient funds remain to cover the cost of this wiring.

The documentation required to describe the systems is approximately three-fourths complete. One completed section of the documentation has been delivered to technical personnel in Scientific Data Center #7 for use in preparing the software programming of the IBM 1800.

As of 1 April 1973, approximately $12,800 of the budgeted $13,532 have been expended. It is anticipated that the remaining funds will be sufficient to complete the work delineated in the original proposal.

Respectfully submitted,

Gene K. Huddleston
Research Engineer

Approved:

J. W. Dees, Chief
Special Techniques Division

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

15 May 1973

Mr. Evan Moorehouse
Assistant to the Director
Department of Administrative Services
Room 124, Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 8 Covering the Period 15 April-15 May 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

Enclosed you will find four copies of the documentation describing the Remote Data Acquisition System. Messers T. S. Britton and V. D. Baker are particularly interested in receiving copies of this document.

The wiring list for the main circuit board has been completed and key-punch cards prepared as required for the machine wiring of this board. It is important to realize that any number of such circuit boards can be subsequently wired using these coded cards in the event that additional units are desired. The blank board for RDAS#2 and coded cards will be shipped to Raytheon for wiring during the next week.

The delivery and installation of RDAS#1 is still awaiting the installation of a telephone line at the air pollution monitoring van located at Howell Mill Water Works.

As of 1 May 1973, approximately $12,900 of the budgeted $13,532 have been expended. It is anticipated that the remaining funds will be sufficient to complete the work delineated in the original proposal.

Respectfully submitted,

Gene K. Huddleston
Research Engineer

Approved:

J. W. Dees, Chief
Special Techniques Division

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

18 June 1973

Mr. Evan Moorehouse
Assistant to the Director
Department of Administrative Services
Room 124, Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 9 Covering the Period from 15 May to 15 June 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

In accordance with instructions received from Mr. T. S. Britton, Remote Data Acquisition System #1 was installed in the air quality monitoring van at Howell Mill Water Works on 24 May 1973.

The instruments in the van that were connected to the RDAS #1 and their channel designations are as follows:

Parameter	Channel No.	Cable No.
Ozone	1	3
Sulfur Dioxide	2	8
Hydrocarbons	3	7
Carbon Monoxide	4	6
(Not Used)	5	-
Coefficient of Haze*	6	-
Wind Speed*	7	-
Wind Direction*	8	-

*Instruments inoperative; will be connected later.

The RDAS appeared to operate satisfactorily; however, not all functions could be tested since no telephone line had yet been installed in the van. Subsequent visits to the site will be made when full-scale field testing can commence.

The main circuit board and wiring list for RDAS #2 was sent to Raytheon for wiring during the last week of May. The wired board has not yet been received by Georgia Tech but is expected during this month. Work on RDAS #2 will be completed as soon as possible after receipt of the board.

Mr. Britton requested additional documentation on the remote data acquisition system; viz., a complete logic diagram of the system. This additional documentation will be furnished in the near future. In addition, all data sheets, instructional manuals, wire lists, etc., used by Georgia Tech during this project will also be delivered upon completion of all testing of the systems.

As of 1 June 1973, approximately $13,300 of the budgeted $13,532 has been expended or encumbered.

Respectfully submitted,

G. K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division

A-1463

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

16 July 1973

Mr. Evan Moorehouse
Assistant to the Director
Department of Administrative Services
Room 124, Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 10 Covering the Period from 15 June to 15 July 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

The remote data acquisition system (RDAS #1) previously installed in the air pollution-monitoring van at Howell Mill Water Works has been interfaced to the telephone data line. Limited testing has been done using a 300-baud computer terminal at Georgia Tech. As far as can be determined from this test device, RDAS #1 responds correctly to all commands; however, complete testing cannot be done until the data handling apparatus at Scientific Data Center #7 is completed.

On 5 July, Messers. Davis and Newman of DOAS attended a demonstration of the limited testing of RDAS #1 described above. The results of the tests clearly showed the necessity of the data handling apparatus at Scientific Data Center #7 in field testing operations. Georgia Tech personnel will be available for future field testing to ensure proper operation of RDAS #1.

The main circuit board for RDAS #2 has not been received from Raytheon where it was sent for wiring. The remaining work on RDAS #2 (installation of the board, debugging, etc.) will be completed as soon as possible after receipt of the board. If additional funding is available, RDAS #2 can be installed by Georgia Tech personnel at the Nuclear Research Center on the Georgia Tech campus; otherwise, the completed unit will be delivered to DOAS for final disposition.

Work remaining on this project includes minor modifications to RDAS #1, field testing of RDAS #1 (in cooperation with DOAS personnel), completion of construction of RDAS #2, laboratory debugging of RDAS #2, and final delivery of the documentation cited in last month's report.

As of 30 June 1973, approximately $13,278 of the budgeted $13,532 has been expended or encumbered.

Respectfully submitted,

Gene K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division

A-1463

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

28 August 1973

Mr. Evan Moorehouse
Assistant to the Director
Department of Administrative Services
Room 124, Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 11 Covering the Period from 15 July to 15 August 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

The main circuit board for RDAS #2 has been received from Raytheon where it was sent for wiring. It is anticipated that RDAS #2 will be completed during the next reporting period.

No field testing of RDAS #1 (installed in the air quality monitoring van at Howell Mill Water Works) has been done during this reporting period. Telephone conversations with Mr. Newman at DOAS indicate that work there on the data handling apparatus is proceeding. Plans are currently underway to provide coordinated field testing of RDAS #1 during the week of 3 September when all key personnel return from their respective vacations or work-connected absences.

Attention is directed to the formal expiration date of 30 June 1973 of this project and to the fact that not all work delineated in the original proposal has been completed. It is noted that the completion of work on RDAS #2 has been delayed by the unexpected length of time required to have the main circuit board wired. (This board and wiring list was sent to Raytheon during the last week in May with an expected turn-around time of 2-3 weeks.) It is also noted that field testing of RDAS #1 has not been initiated because of unavoidable delays in the completion of the data handling apparatus at Scientific Data Center #7. The key personnel engaged in this project at Georgia Tech are committed to the completion of the work outlined in the original proposal so that the full potential of the remote data acquisition systems may be realized.

As of 31 July 1973, approximately $13,278 of the budgeted $13,532 has been expended or encumbered.

Respectfully submitted,

Gene K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division

ENGINEERING EXPERIMENT STATION
GEORGIA INSTITUTE OF TECHNOLOGY
225 North Avenue, Northwest · Atlanta, Georgia 30332

26 September 1973

Mr. Evan Moorehouse
Assistant to the Director
Department of Administrative Services
Room 124, Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 12 Covering the Period from 15 August 1973 to 15 September 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

Efforts during the current reporting period have been directed toward repair and field testing of RDAS #1 installed in the air quality monitoring van at Howell Mill Water Works.

Two visits were made to the site by Georgia Tech personnel to correct malfunctions in RDAS #1. It was found that integrated circuit chips MC1489 (FG017) and 7408 (AE034) had failed. Also, the Memodyne Model 103 incremental tape recorder unit was not functioning properly. The failure of the MC1489 chip was attributed to lightning-induced surges entering the system from the Telco 103 data phone. All defective parts were replaced, and the system is presently operational as determined from tests conducted using the 300-baud CRT terminal at Georgia Tech as late as 24 September 1973.

Integrated circuit chips 74185A required in the printer interface circuitry finally arrived and have been installed in RDAS #1. These chips provide for the conversion of the eight-bit binary data words to three-digit decimal equivalents (0 to 255) for outputting on the Addmaster printer. It is noted that conversion of the three-digit output of the printer to "percent full scale" may be accomplished by dividing the printer output by 2.56. A graph has been provided at the site to enable air quality personnel to make this conversion easily.

Some field testing of the RDAS #1 by Georgia Tech and DOAS personnel has been done; however, technical difficulties with the circuitry interfacing the IBM 1800 to the telephone line have prevented complete testing. It is anticipated that these difficulties will be resolved during the next reporting period.

Little progress has been made on the completion of RDAS #2 due to the direction of effort toward RDAS #1. Completion of RDAS #2 will now be complicated by the fact that the tape recorder unit must be sent to the factory for repairs.

As of 31 August 1973, approximately $13,344 of the budgeted $13,532 has been expended.

Respectfully submitted,

Gene K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division

A-1463

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

23 October 1973

Mr. Evan Moorehouse
Assistant to the Director
Department of Administrative Services
Room 124, Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 13 Covering the Period from 15 September to 15 October 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

Efforts during the current reporting period have been directed toward field testing of RDAS #1 in cooperation with DOAS personnel.

Tests were performed to verify that the communications interface for the IBM 1800 is in working order. However, during subsequent tests, it was found that RDAS #1 was intermittent in responding to certain commands. Also, it was found that the data stored on the magnetic tape was not being stored and recovered correctly.

Several visits have been made to RDAS #1 by Georgia Tech personnel to correct the malfunctions in that system. In the process, certain modifications have been made to improve the performance of the system:

(1) RDAS #1 now responds to the command "REQUEST REAL TIME DATA" by sending the channel data in numerical order; however, all zeroes are sent for Channel 1 the first time and every odd number time thereafter.

(2) Upon completion of a tape rewind and when the tape is positioned for reading, the ID code is transmitted to the Central Control Station.

(3) The command "END OF MESSAGE" is now used to place the tape recorder in the "write" mode; the command "REQUEST STOP" now merely serves to clear the message register.

(4) Changes have been made to correct the problem with the tape data, but no tests have been performed to verify correct operation.

The problem of intermittent response of RDAS #1 to certain commands has not yet been resolved. The problem is complicated by the fact that the system works perfectly when a 300-baud terminal is connected directly to RDAS #1 without going through the Data phone; however, when the telephone network is used, malfunctions occur on some messages but not others. Efforts are continuing to locate the problem and correct it.

As of 30 September 1973, approximately $13,344 of the budgeted $13,532 has been expended.

Respectfully submitted,

Gene K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division

A-1463

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

7 December 1973

Mr. Evan Moorehouse
Assistant to the Director
Department of Administrative Services
Room 124, Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Subject: Monthly Progress Report No. 14 Covering the Period from 15 October 1973 to 15 November 1973, Georgia Tech Project A-1463, "Centralized Monitoring of Environmental Pollution Sensors in Georgia: A Prototype Remote Data Acquisition System"

Dear Sir:

Efforts during this reporting period have been directed toward correcting malfunctions in RDAS #1.

The problem of intermittent response of RDAS #1 to certain commands mentioned in the last report has been identified and corrected. RDAS #1 now receives and decodes all messages as required.

The tape recorder unit was tested and found to have two faculty circuit cards: the Motor Drive Card and the Write Step Card. These cards have been replaced and tests conducted to verify that the recorder does indeed write and read data. A complete verification of the correct operation of the tape unit and other circuitry can be made only in conjunction with the data receiving equipment at the IBM 1800. These tests will be performed in the near future.

During earlier field tests, it was discovered that the IBM 1800 communications interface was not working correctly. Personnel at DOAS are working to resolve that problem so that other field testing of RDAS #1 can resume.

The efforts of Messers. Baker, Britton, and Newman of DOAS in helping to resolve the problems with RDAS #1 are gratefully acknowledged. Particular appreciation is expressed for their loan of a storage oscilloscope and remote terminal for use in testing RDAS #1.

As of 30 October 1973, approximately $13,352 of the budgeted $13,532 has been expended.

Respectfully submitted,

Gene K. Huddleston
Project Director

Approved:

J. W. Dees, Chief
Special Techniques Division